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ACAS makes history with automated maneuver

by Melissa Withrow, Air Vehicles Directorate

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — On August 7, the Air Vehicles Directorate's Automatic Air Collision Avoidance System (Auto ACAS) made aviation history at Edwards Air Force Base, Calif., when two F-16 aircraft demonstrated the world's first automated maneuver to avoid collision using data links.

During this flight, each aircraft broadcasted its position and trajectory using a data link and received identical information transmitted from the other aircraft. Both aircraft were equipped with the Auto ACAS computer algorithm, which compared their trajectories and looked for a potential collision. When collision was imminent, the two aircraft coordinated their escape maneuvers and timed them to begin at the last possible instant to avoid the collision. Auto ACAS returned control to the pilots as soon as the aircraft began to separate a second or two later. The flight test ended on August 22, with a total of 43 sorties and 73 flight hours.

A previous flight in July demonstrated Auto ACAS's use of radar data. In this flight, one F-16 was equipped with the Auto ACAS algorithm and used its radar as the input to the algorithm, and the other F-16 had no ACAS. The two aircraft flew toward each other in eight different collision scenarios including head-on, tail chase and beam. In every scenario, the Auto ACAS algorithm interacted with the aircraft's on-board radar system to successfully separate the F-16s without pilot input.

Auto ACAS engineers are currently analyzing data from the test flights. Once data analysis is accomplished, a final report will be written indicating if further tests are necessary prior to operational use. @